# Beam Monitoring System Overview

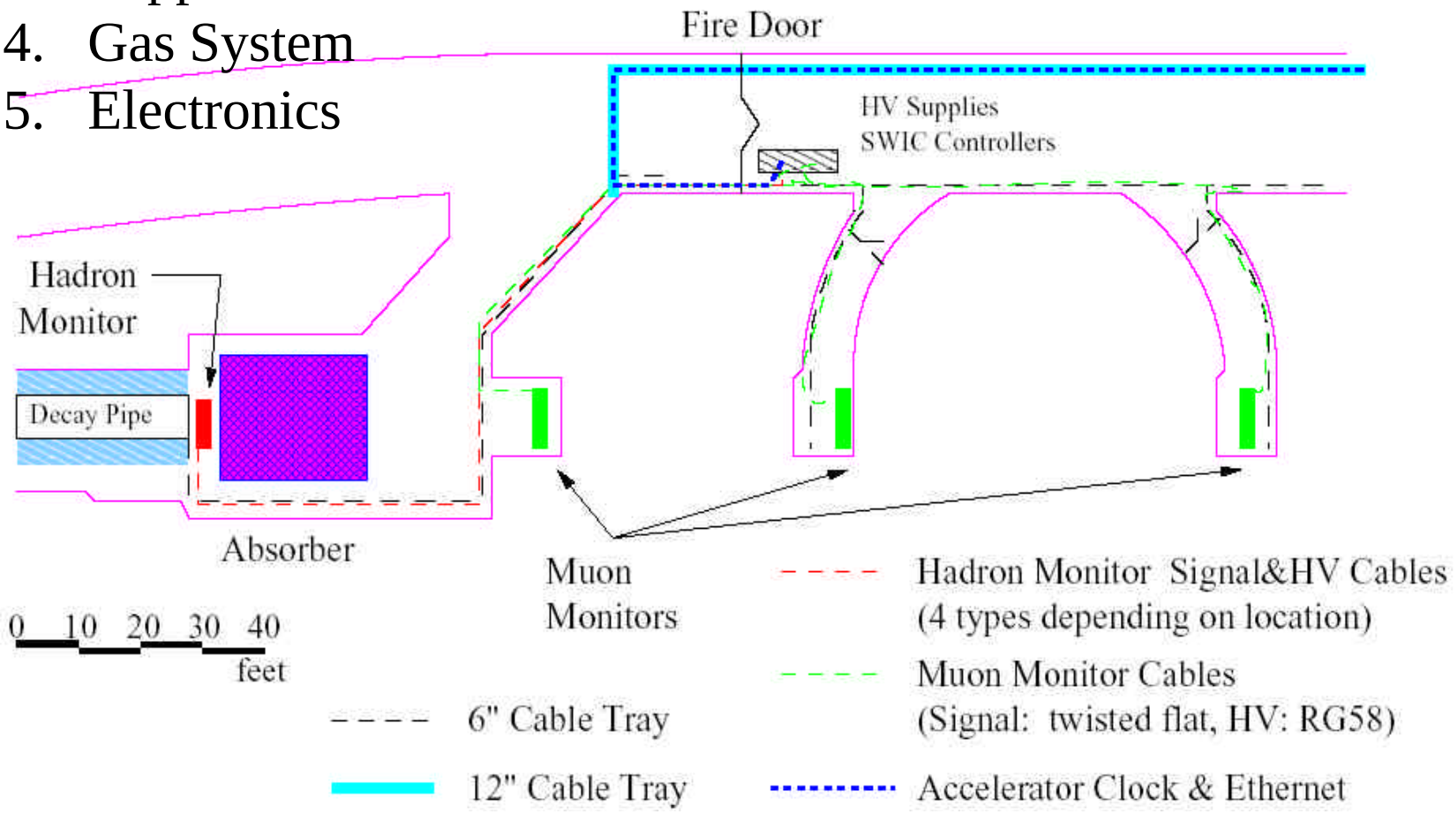
Components:

1. 1 Hadron Monitor
2. 3 Muon Monitors
3. Support Structures
4. Gas System
5. Electronics

Co-Level 3 Managers:

*Sacha Kopp – U.Texas, Austin*

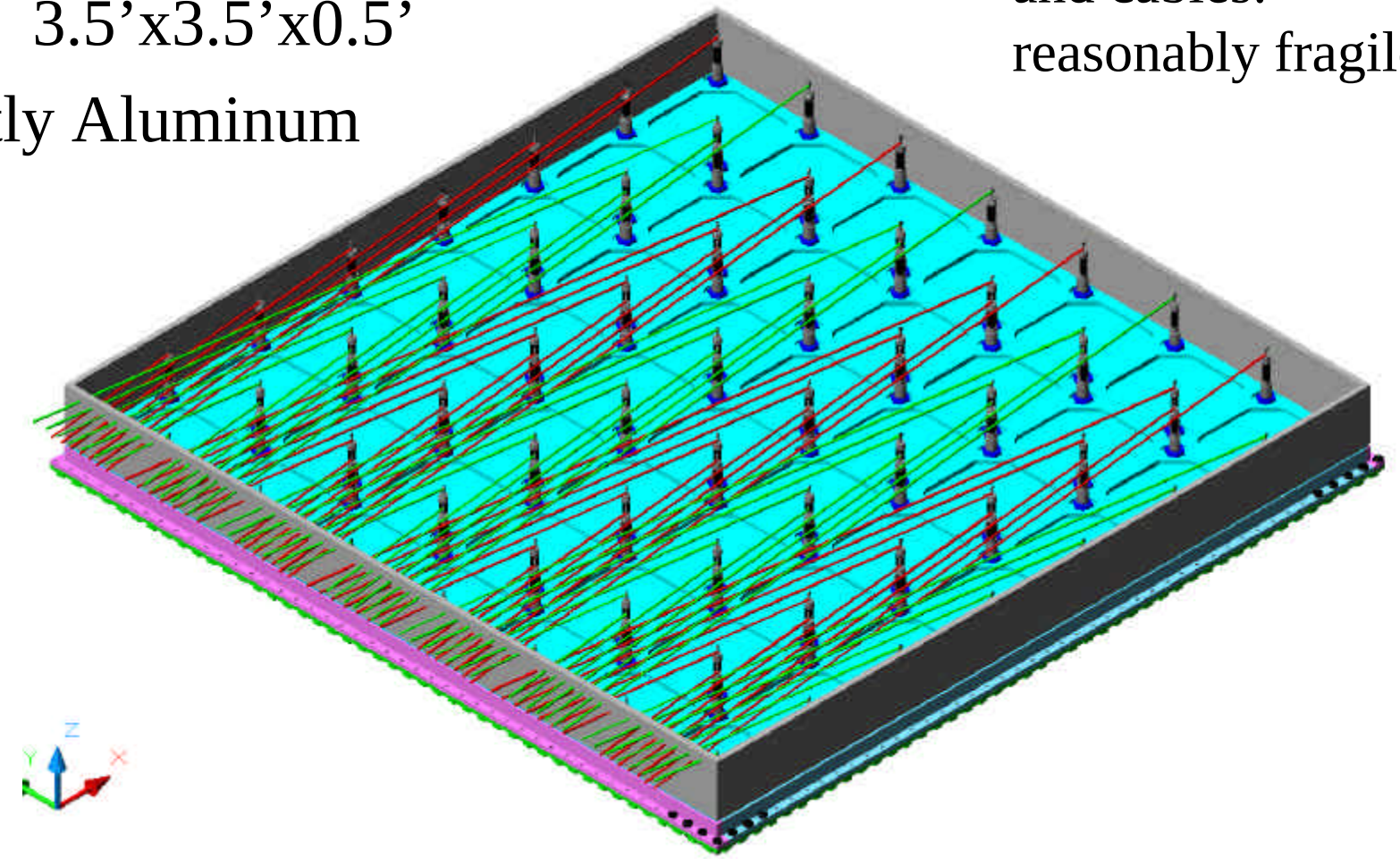
*Debbie Harris -- Fermilab*



# Hadron Monitor

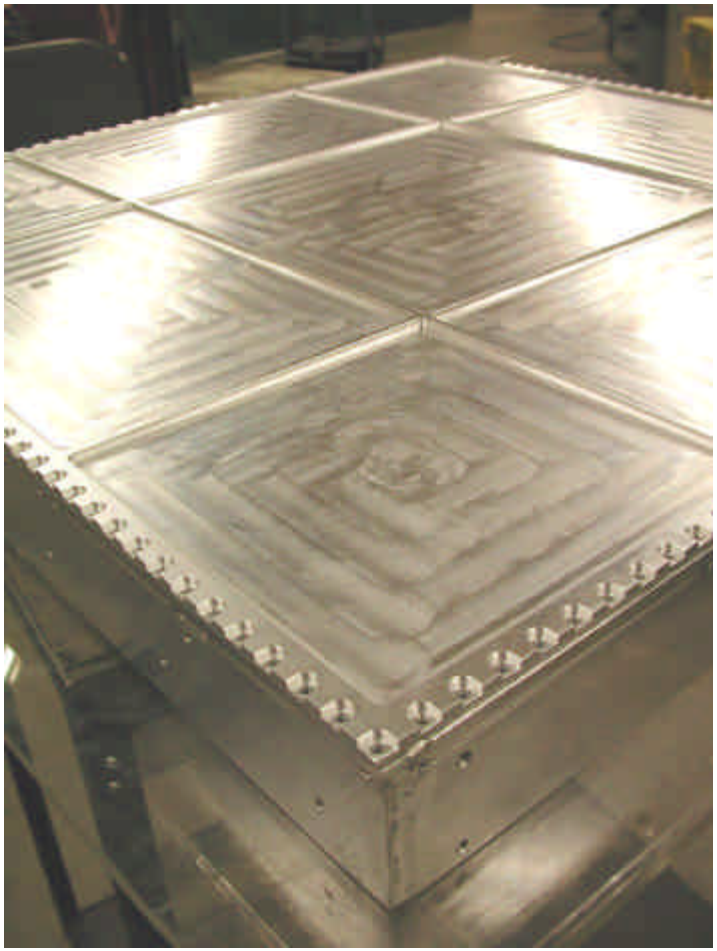
- Weight:  40lbs
- Size:  3.5’x3.5’x0.5’
- Mostly Aluminum

Contents:
ceramic plates
and cables:
reasonably fragile

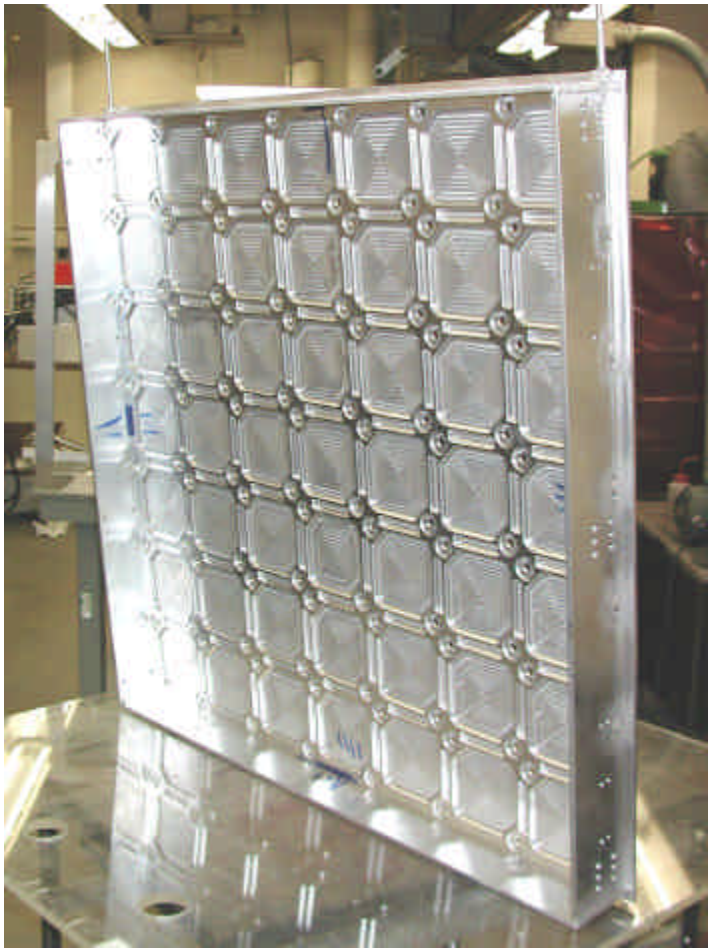


# Hadron Monitor Construction

(*Univ. of Texas – Austin, S.Kopp*)

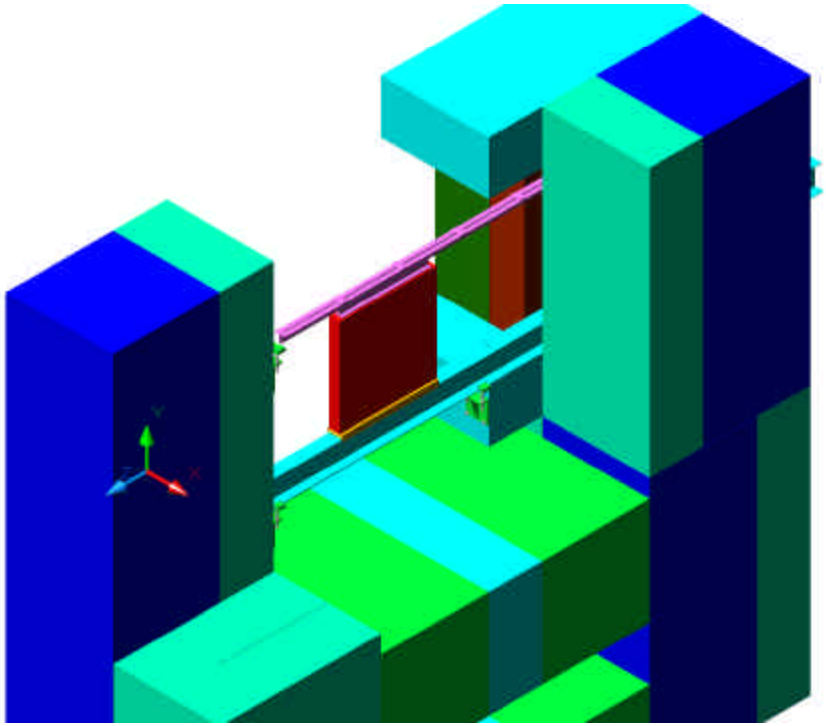


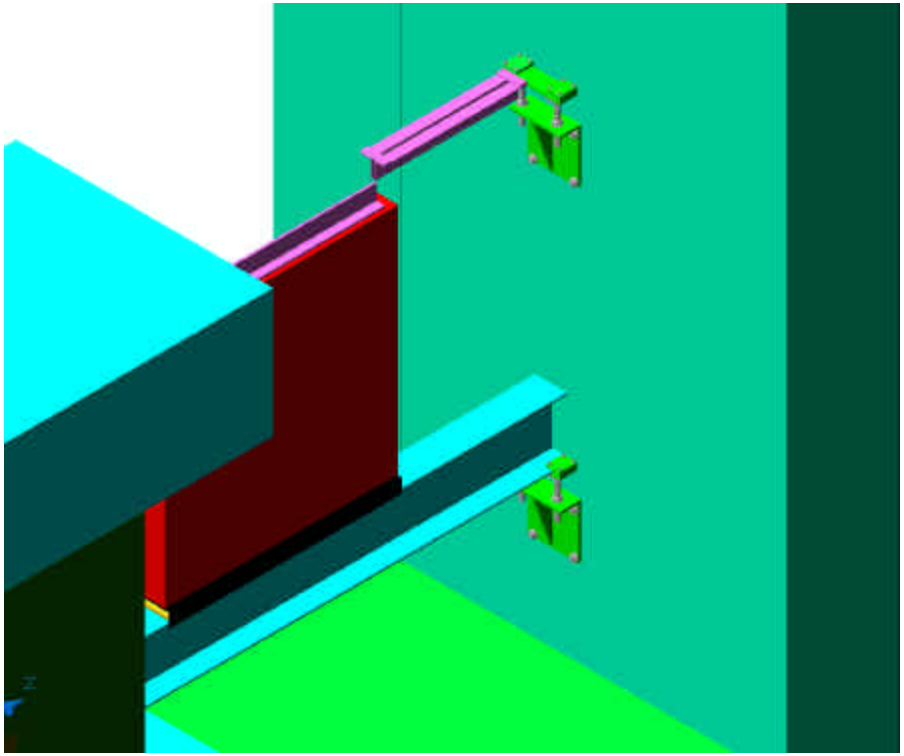
*front window*



*rear feedthrough base*

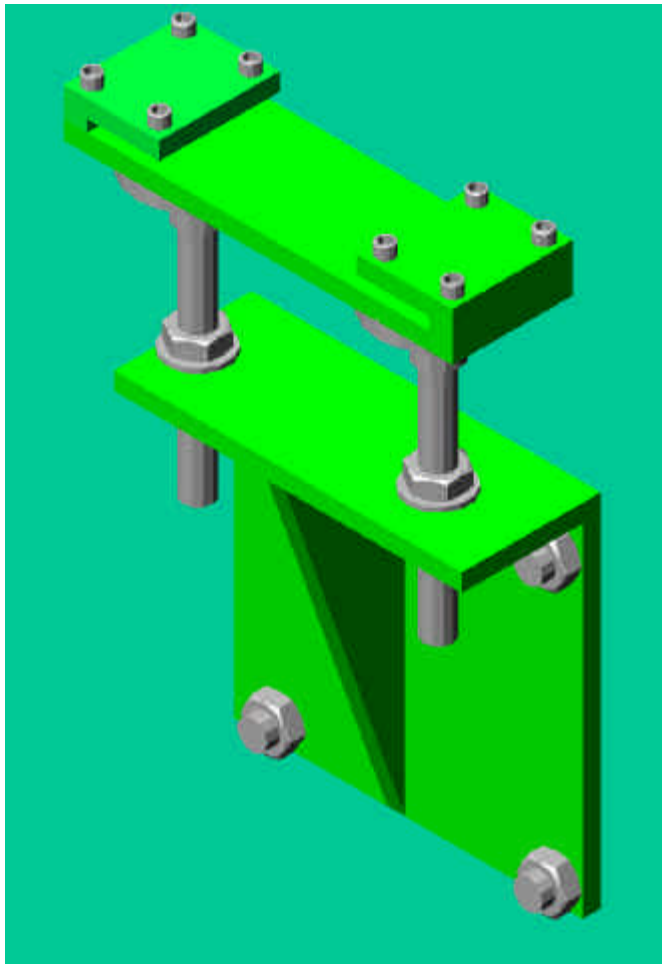
# Hadron Monitor Support Structure

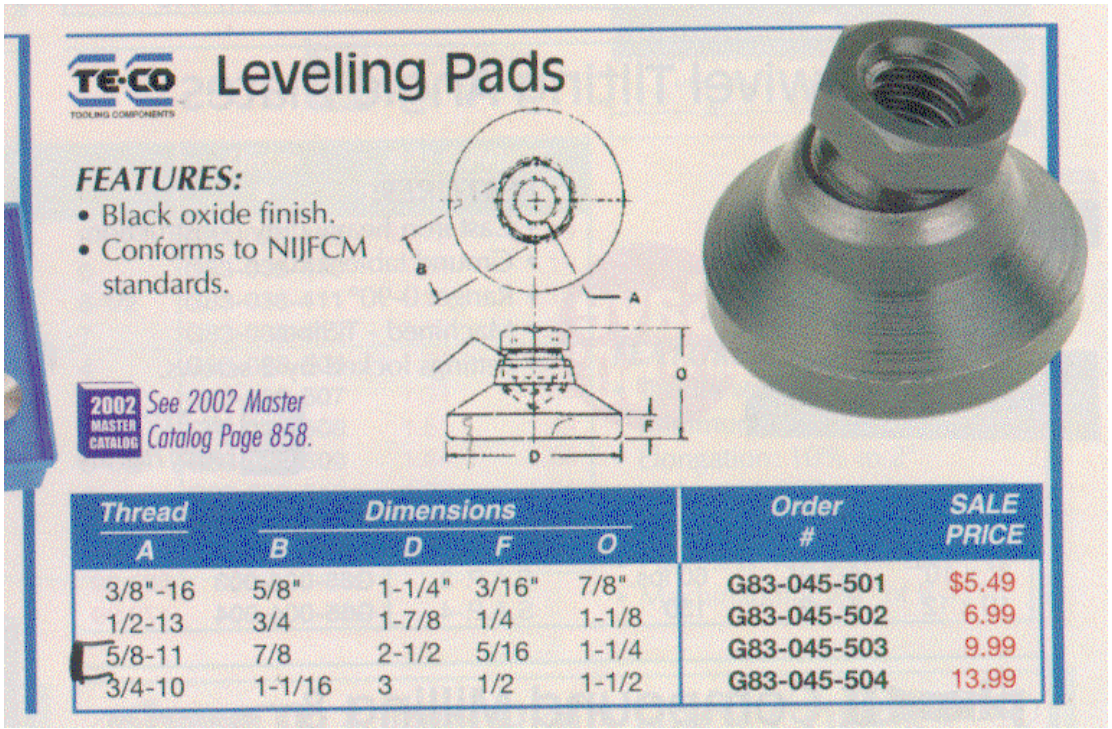




Support will be provided by 2 6” I-beams
Each I-beam measures 12’x6”x4”, <200lbs if Al

# Hadron Monitor I-Beam Support






Leveling pads allow easier alignment (located upside down in figure)

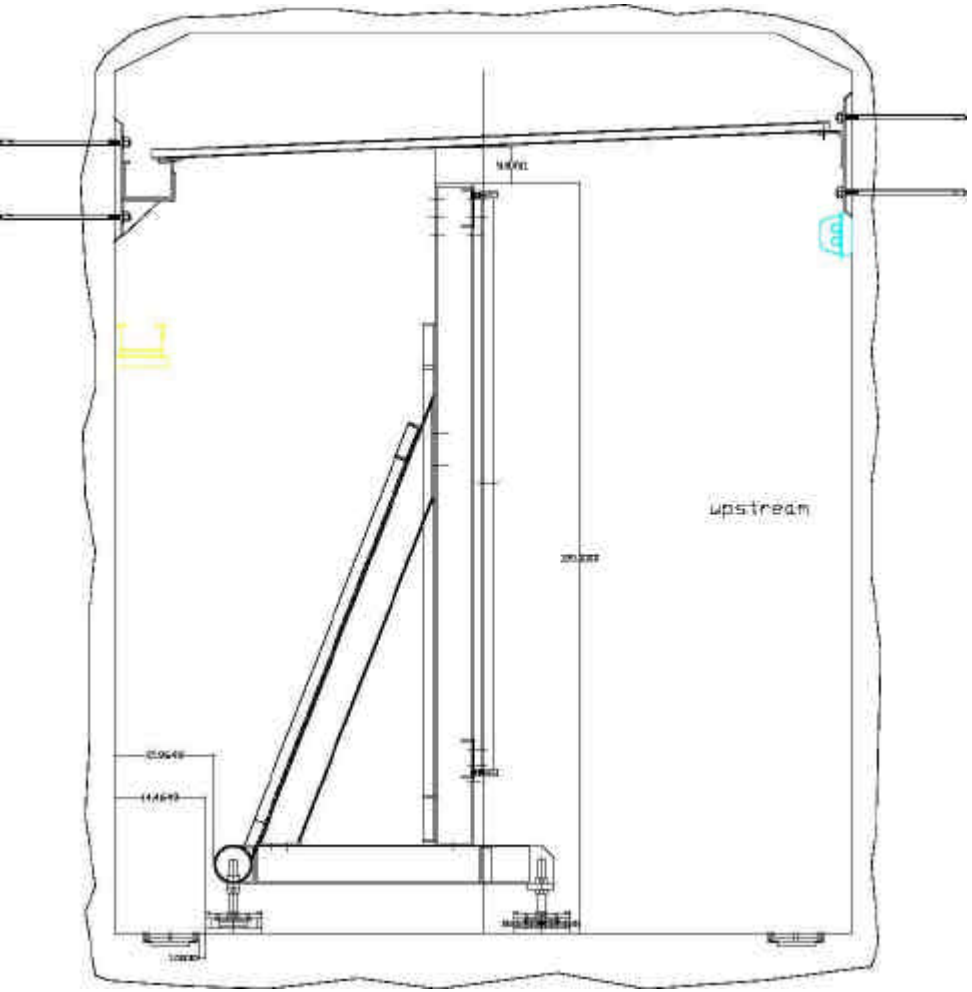
# Muon Monitor Chambers

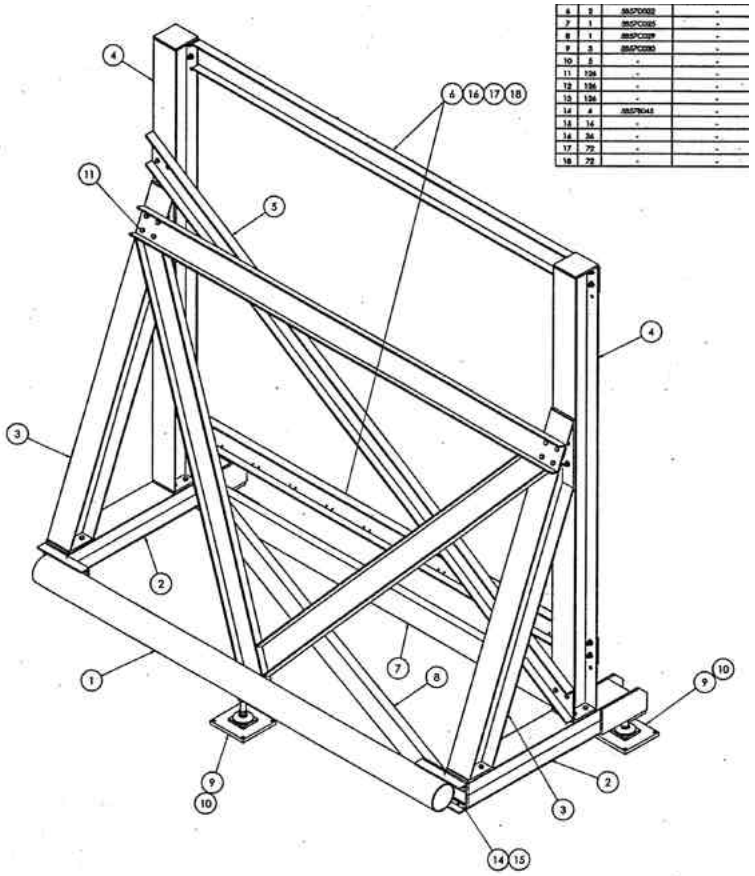
- 1 chamber: 50 lbs
- 27 chambers total, 9 per alcove
- Stacked together, would be 8’ long x 4’ tall x 4 wide’
- Each one contains 9 Am sources for calibration
- Gets shipped to rad safety first, then to us

*At University of Texas-Austin: D.Indurthy, M.Lang, S. Mendoza, L.Phelps, M.Proga,N.Rao, R.Zwaska*

# Muon Monitor Supports

(*Univ. of Wisconsin -A. Erwin*)



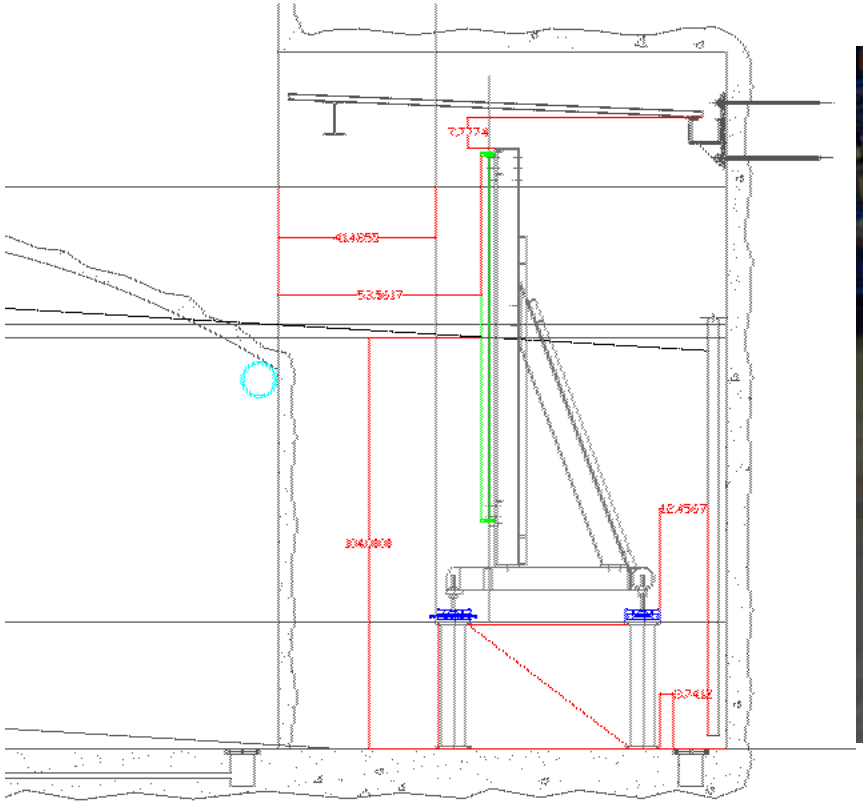
Largest Piece: 9.5’x5’x0.5’

Will be transported underground in ~16 pieces

Heaviest Single Piece: 141 lbs, most others 50lbs or less

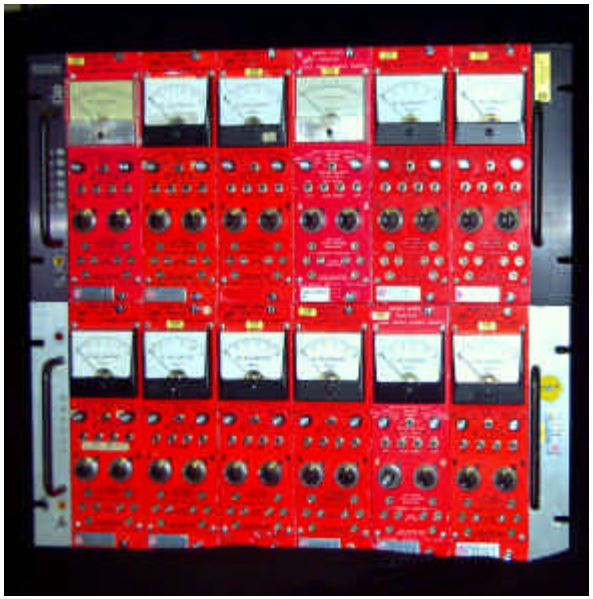
# First Alcove: Support Pedestal

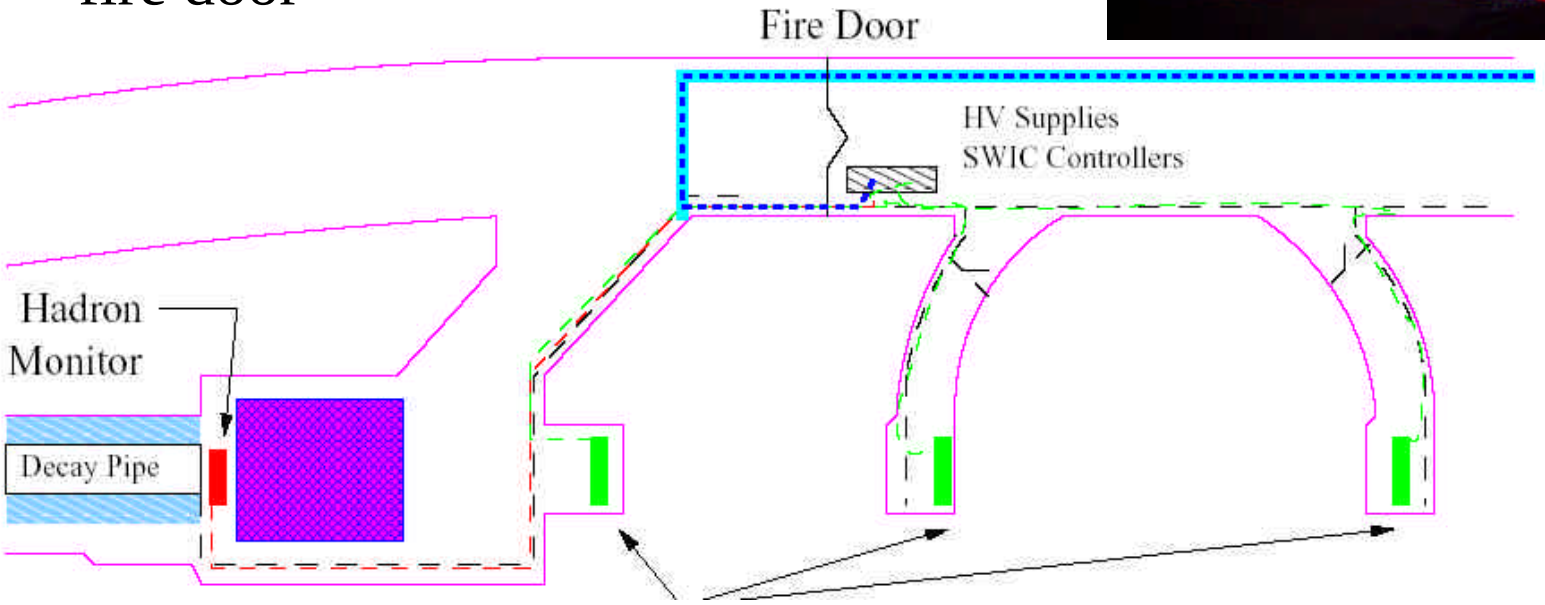
- Alcove 1 Monitor stands higher off the ground than alcoves 2 and 3, needs a pedestal



# Beamline Monitoring Electronics

- Expect to use 3-4 racks
- Droege High Voltage Supplies
- Standard Beamline SWIC Scanners
- Stuff racks upstairs then transport them downstairs
- Located in hallway downstream of fire door





# Beamline Monitoring Gas System

- Helium Gas during normal running, may be Argon in the beginning for commissioning

•Final Configuration

–8-pack near base of shaft

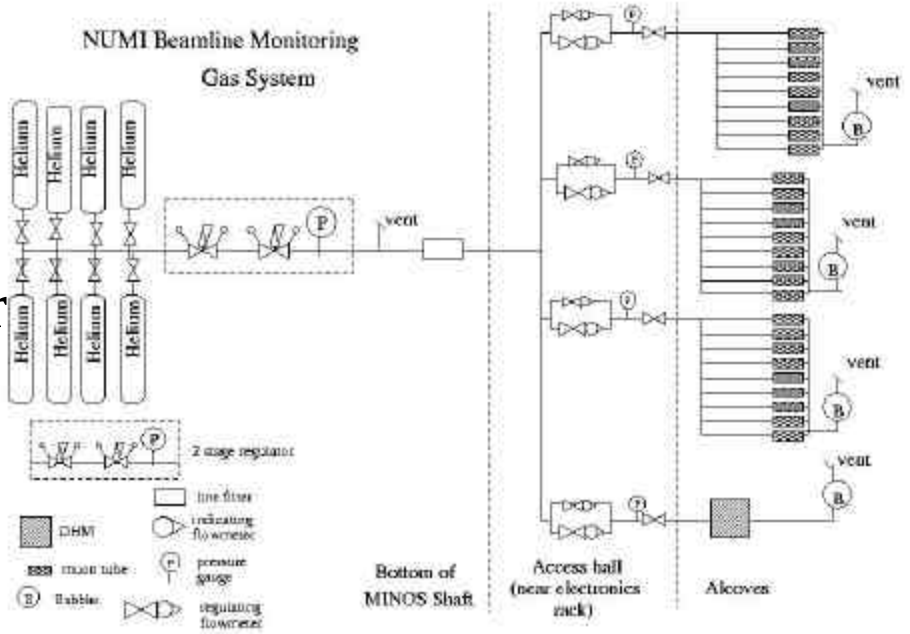
–1 gas rack near electronics

–4 lines out of rack to absorber location and each alcove

–Split to 9 lines in each alcove

–Vent to exhaust in alcoves

–Vent to exhaust for Had.Mon.



# Summary of Components

| Component (# if more than one) | Final Location | Weight | Size |
|---|---|---|---|
| Hadron Monitor | Upstream of Absorber | 40lbs | 3.5'x3.5'x6" |
| Had. Mon. Support | Upstream of Absorber | Few hundred pounds | 12'x6"x4" I-beams + hardware |
| Muon Monitors (27) | Alcoves 1,2,3 | 50lbs each | 7'x2"x6" |
| Muon Mon. Support (3) | Alcoves 1,2,3 | Many pieces, heaviest 141lbs | Biggest piece 9.5'x5'x0.5' |
| Cables (signal, HV) | Access Tunnel | - | |
| Electronics Racks (3-4) | Access Tunnel | Few hundred pounds-stuffed | Standard Rack Size |
| Gas System | Access Tunnel, Base of shaft, Alcoves, before Absorber | | |